EDGAR (J.C.)

The Treatment of Puerperal Eclampsia

BY

JAMES CLIFTON EDGAR, M.D.

ASSOCIATE PROFESSOR OF OBSTETRICS IN THE MEDICAL DEPARTMENT OF THE UNIVERSITY OF THE CITY OF NEW YORK; ATTENDING PHYSICIAN TO THE SOCIETY OF THE LYING-IN HOSPITAL, TO THE NEW YORK MATERNITY AND TO THE EMERGENCY HOSPITALS; LECTURER AND EXAMINER ON OBSTETRICS IN THE NEW YORK TRAINING SCHOOL FOR NURSES

WITH NUMEROUS ILLUSTRATIONS

Reprinted from the MEDICAL RECORD, *December 26, 1896, and January 2, 1897*

NEW YORK
THE PUBLISHERS' PRINTING COMPANY
132, 134, 136 WEST FOURTEENTH STREET
1897

THE TREATMENT OF PUERPERAL ECLAMPSIA.[1]

By J. CLIFTON EDGAR, M.D.

It is necessary to preface our remarks upon the preventive and curative treatment of puerperal eclampsia with the statement that the real cause of the condition in the human female is still an unknown quantity. As far as we are aware, no new light has been thrown upon the pathology and etiology of the condition.

That the pre-eclamptic condition and the subsequent eclamptic seizure are due to (1) uræmia, (2) hydræmia, (3) ammoniæmia, (4) reflex irritation, (5) microbic influences, or (6) to the influence upon the system of some toxic material, modern scientific investigation does not permit us to state. Most observers are agreed that the last mentioned approaches the true explanation, and that the condition is one of toxæmia, of auto-infection, of an accumulation in the blood of some toxic material—biliary, urinary, fœtal, or all three, but just what this material is has not up to the present time been determined. It appears probable, moreover, that the condition has not one but many causes. Further, modern clinical research and study would seem to prove that the pre-eclamptic state, or what some have been pleased to term "the toxæmia of pregnancy," has certain well-marked symptoms and signs to guide us to a diagnosis of this condition, and that in the majority, if not in all instances, this state extends over a period of days, if not weeks or months.

The limits of the present paper do not permit us to enlarge further upon the clinical picture of this pre-eclamptic condition, other than to state that it resembles closely the clinical picture seen in slow or rapid poisoning by some mineral or narcotic poison, and that the condition is always accompanied by failure of the eliminative organs to do their duty, notably on the part of the kidneys. If these premises are correct, then of the two treatments of eclampsia, the preventive and the curative, the former is by far the most important, especially so when we come to find that in the majority, if not in all instances, the eclamptic seizure is a preventable accident.

(*a*) **The Preventive Treatment.**—What symptom or sign, or what combination of symptoms or signs, have we then, that will enable us to recognize this pre-eclamptic state, in order that we may be warned in time to prevent the subsequent eclamptic convulsions?

The symptoms of the state preceding an eclamptic attack include a rapid pulse, accompanied usually by high arterial tension, loss of appetite, gastric and intestinal disturbances, headache, lassitude mental and physical, a gradual or rapid diminution of all the excretions, both liquid and solid—in a word, what one would expect to observe from the introduction or retention in the blood of some toxic material.

Aside from the direct examination of the blood itself, the condition of the urinary secretion offers us the most convenient physical sign or clinical index of this pre-eclamptic state. The amount of urine passed in twenty-four hours is not always a reliable guide of kidney failure. Albuminuria, as is well known, may be absent before, during, and even after an eclamptic seizure. The amount of urea excreted is a far better guide, as has been shown by Bouchard, of Paris, in the non-pregnant condition, and recently by Dr. E. P. Davis, of Philadelphia, in pregnancy; for the latter found that when urea fell to 1.5 per cent., stimulation of the excreting processes resulted in distinctly favorable results, in all cases in which toxic symptoms were previously present. It is not to be inferred from this that urea causes the convulsions, for large quantities of urea may be injected into rabbits without producing toxic symptoms. Indeed, Bouchard found that bile had nine times the toxic power of urea. It is generally accepted that the diminution in the amount of the urea excreted indicates kidney inadequacy, but it is not always a reliable guide. There are other substances in the urine with as great or greater poisonous qualities. Urea may be found in sufficient quantity and an eclamptic attack occur. Bouchard determined the toxicity of the urine by injections of the same into the circulation of rabbits. His experiments show that normal healthy urine is toxic in the proportion of a certain unit per kilo by weight of the rabbit. In kidney insufficiency, when some poison or poisons are retained in the circulation, the toxic properties of the urine diminish, and it requires more of the urine to the kilo by weight of the rabbit to produce toxic symptoms in the animal. This gives us a delicate test for determining kidney inadequacy in doubtful cases. Bouchard's experiments further show that in renal insufficiency the poisons retained in the patient's blood arise from:

1. Food, especially nitrogenous food, as muscle, and food containing the salts of potassium.
2. Bile.
3. Putrefaction in the intestines, and absorption of its products.
4. Toxic materials constantly being produced by the metabolism of all the cells of the body.

To this last we add the metabolism of the fœtal tissues, as this greatly increases the toxic material in the mother's blood, for, clinically, we are familiar with the fact that when the fœtus dies *in utero*, or is delivered in the case of a living child, the eclamptic seizures usually cease.

Again, Winckel's observation that in twin and triplet pregnancies there is a greater predisposition to eclampsia has been verified by others. Moreover, the tendency to eclampsia becomes greater proportionately with the advance of gestation and the consequent increase of fœtal metabolism.

Further, we know that the maternal mortality diminishes progressively from the ante-partum to the post-partum states; namely, that it is greatest when eclampsia sets in during pregnancy, is less during labor, and lowest of all when the attack occurs for the first time after the birth of the child. Thus, the mortality during eight years at the Boston Lying-in Hospital, as has been shown by Green,[1] was: Ante-partum eclampsia, maternal mortality, 46 per cent.; fœtal mortality, 69 per cent. Intra-partum eclampsia, maternal mortality,

[1] Read before the New York Academy of Medicine, at a special meeting, November 27, 1896.

[1] Green: "Puerperal Eclampsia. Experience of the Boston Lying-in Hospital in the Last Eight Years," American Journal of Obstetrics, 1893, xxviii., 18–44.

25 per cent.; fœtal mortality, 25 per cent. Post-partum eclampsia, maternal mortality, 7 per cent.

Our present knowledge of the causation of puerperal eclampsia, meagre though it be, furnishes us, if not with the key to the successful preventive treatment of the condition, still with a working hypothesis, namely, the early recognition of the pre-eclamptic state. To accomplish this, something more than a perfunctory monthly or bimonthly examination of the urine for the presence of albumin is called for, since non-albuminuric eclampsia occurs in from nine to sixteen per cent. of cases, and it would appear to be quite as fatal, if not more so than an eclampsia accompanied by albuminuria. Something more is demanded than the late recognition of renal insufficiency, as it shows itself in a marked diminution in the quantity of urine, specific gravity of the same, and amount of urea excreted.

When we shall accustom ourselves to watch our cases of pregnancy, not only for the physical signs of pronounced renal inadequacy as an index of an approaching eclamptic attack, but also for the general symptoms of the overcharging of the blood with toxic material—as high arterial tension, headache, gastric disturbances, physical and mental lassitude, and further for failure of the bowels, liver, skin, and lungs properly to perform their functions, and intelligently treat the same, then, and then only shall we have done our whole duty by our patient, and done all in our power to correct the pre-eclamptic condition and avert an impending eclampsia.

We would formulate our line of treatment of this pre-eclamptic state somewhat in the following manner:

1. Reduce the amount of nitrogenous food to a minimum.

2. Limit the production and absorption of toxic materials in the intestines and tissues of the body, and assist in their elimination by improving the action of (1) the bowels, (2) the kidneys, (3) the liver, (4) the skin, and (5) the lungs.

3. If necessary, remove the source of fœtal metabolism and of peripheral irritation in the uterus by the emptying of that organ.

Our first indication, the reduction of the amount of nitrogenous food to a minimum, can best be fulfilled in an exclusive milk diet, to which, as the symptoms subside or disappear, can be added fish and white meats. We have found it not only safer, but less trying to the patient, to commence with an absolute milk diet, than to compromise and afterward be compelled to cut off all but the milk. For our second indication —that of elimination—we must first secure an abundant supply of pure air and water. This may be assisted by moderate exercise or light calisthenics or massage, in certain instances. For the bowels we advocate daily doses of colocynth and aloes at bedtime, followed by a saline in the morning. For the liver an occasional dose of calomel and soda at bedtime, followed in the morning by one of the stronger sulphur waters, as Rubinat, Villacabras, or Birmenstorf. Increased diuresis is secured by maximum doses of glonoin. The action of the skin is encouraged by encasing the body in wool or flannel underclothing, by massage, by the warm bath, hot bath, hot pack, or hot-air bath, according to the urgency of the case.

We are accustomed in instances of eliminative insufficiency to give at bedtime twice weekly, or more frequently if necessary, a tablet composed of calomel, digitalis, and squill, each one grain, and muriate of pilocarpine, one-twentieth of a grain. This is followed in the morning by a full dose of Villacabras water. We have found a decided diaphoretic-diuretic action follow the administration of such a combination, with the additional prompt action upon the liver and intestines as well. So of our five eliminative processes four are stimulated to more energetic action by its use.

Because jaborandi has been practically abandoned as a diaphoretic in the presence of an eclamptic attack, we know of no good reason contraindicating its use in this, the pre-eclamptic state, in the absence of pronounced cardiac disease, and we advocate its use for its diaphoretic and diuretic actions.

Finally, when exercise cannot be taken and an abundant supply of fresh air is wanting, oxygen inhalations will prove of service. Some preparation of iron will also be called for, as the tincture of the chloride, or Basham's mixture.

This, then, is the general hygienic and medicinal treatment of the pre-eclamptic state. No hard and fast rule can be laid down. Every case must be treated on its merits. In one a restricted diet and mild stimulation of the renal and intestinal functions is sufficient, and the patient may be allowed to be about and even exercise in the open air, her skin being protected from sudden changes by being incased in wool or flannel. Other more pronounced cases of eliminative insufficiency must be kept absolutely quiet in bed upon an exclusive milk diet, and the stimulation of all the eliminative organs must be resorted to, to remove the symptoms of impending eclampsia.

But it must be kept ever before us that the hygienic and medicinal treatment is only of secondary importance to the milk diet, and that the latter is the foundation of the preventive treatment of puerperal eclampsia. Given a case in which, in spite of an exclusive milk diet and the vigorous stimulation of the five excretory outlets already mentioned, the symptoms and signs of the pre-eclamptic condition continue or at any time become urgent, the indication is to induce artificially abortion or premature labor.

We cannot understand the position of those authorities (notably of the British school of midwifery) who advise against inducing labor in the presence of urgent symptoms of the pre-eclamptic state.

The arguments that by the methods usually in vogue induced labor increases reflex excitability and precipitates convulsions; that by the same methods, because of the time necessary to remove the barrier of the cervix, the patient's fate is sealed before the delivery is effected; and, moreover, that the onset of labor increases the danger to the patient, are good ones and must demand our attention.

In answer, we would state that our methods of terminating the pregnancy need not increase reflex excitability, and if perchance they do, the excitability is readily controlled for the time necessary to accomplish our ends; that the time necessary is, in most cases, very short; and, finally, that to-day the onset of labor and the termination of pregnancy may be practically brought about at one and the same time, and we have no prolonged or tedious labor to react unfavorably upon the patient.

The objection raised by Byers at the last (second) International Congress of Obstetrics and Gynecology, held at Geneva, in September, 1896, that induced labor, because of the necessary manipulation, increases

the risk of sepsis, will not deter us from performing the operation when we know we are surgically clean.

Charles, of the Liége Maternity, reported, at the last International Congress of Obstetrics and Gynecology, in favor of induced labor, when treatment fails or the symptoms become urgent in the pre-eclamptic state. His statistical table shows that every mother recovered and seventy-five per cent. of the children were saved.

We believe in a rapid manual dilatation of the os in these cases, but only after the cervical canal is in a condition favorable for its safe performance. Moreover, we would insist upon a complete dilatation of the os before delivery is undertaken.

(*b*) **The Curative Treatment.**—In the presence of an eclamptic attack we face a desperate condition. The latest statistics from various parts of the world still place the maternal mortality at from twenty-five to thirty-five per cent. As long as the pathology of eclampsia remains obscure there can be no rational curative treatment of the condition. Our experience does not permit of our recommending any single treatment. Many subjects recover, no matter what the treatment, many die in spite of treatment, and others do well without any treatment at all. No single treatment can be recommended; each case must be managed according to the indications present. Our experience has taught us that not a single but a combined treatment promises best for saving the lives of mother and child in the event of an eclamptic seizure. We would offer for this combined treatment three indications, as follows:

I. Control the convulsions.

II. Empty the uterus under deep anæsthesia, by some method that is rapid and that will cause as little injury to the patient as possible.

III. Eliminate the poison or poisons which we presume cause the convulsions.

Although we have named these indications in the order of their importance, still we often carry them all out at one and the same time. In another class of cases we fulfil the first and third, and wait for a suitable moment to carry out the second. The third indication—elimination—should really go hand in hand with the first two and be put into action at one and the same time with them.

(*I.*) *Control the convulsions.* There is to-day a wide range of opinion regarding the relative value of the various medicinal means employed to control eclamptic convulsions. That eclamptic attacks must be controlled, that the danger to mother and child is in direct proportion to the number of convulsions occurring before the emptying of the uterus, most observers are agreed. The four medicinal means most certain and safe as antieclamptics are chloroform, morphine (hypodermatically), veratrum viride, and chloral hydrate, the latter alone or combined with sodium bromide. It would appear from the Transactions of the last International Congress of Obstetrics and Gynecology that of these drugs morphine is most frequently relied upon.

We cannot altogether subscribe to the teachings of the Rotunda Hospital, that morphine and chloral when given in eclampsia "act just like the poison which causes the eclampsia and increase the tendency to death;" still we believe we are too prone to resort to the purely symptomatic treatment with narcotics and anæsthetics, forgetting the more important eliminative treatment. At the Rotunda chloroform is now given only when operative interference is required. For the convulsions at this hospital morphine would seem to have given much better results than chloroform for years past. Our preference is for chloroform, veratrum viride, and chloral, in the order named. Until three years ago we used morphine freely in eclampsia, but since have abandoned its use almost entirely, as we believe it prolongs the post-eclamptic stupor and increases the tendency to death during coma by interfering with the eliminative processes.

Second only to chloroform in value is veratrum viride. Provided the pulse be strong as well as rapid, it is the most certain means at our command for temporarily and even permanently controlling the convulsions. When the pulse is weak we rely upon morphine hypodermatically, chloroform by inhalation, and chloral by rectum, with stimulation if necessary. As a temporary measure in ante-partum and intra-partum and even as a curative means in post-partum eclampsia, veratrum viride will, we believe, accomplish all that has been claimed for it.

(1) Veratrum viride reduces the pulse rate, and convulsions are practically unknown with a pulse rate of 60 or under; (2) it reduces the temperature; (3) it relaxes and renders more yielding the rigidity of the cervical rings; (4) it causes prompt diaphoresis and (5) diuresis, so that it aids not only in the fulfilment of our first indication, the control of the convulsions, but in the third, the elimination of an unknown poison as well. Our practice has been to rely upon chloroform, veratrum viride, and morphine or chloral as temporary measures, and the prompt emptying of the uterus permanently to control the convulsions.

(*II.*) *Empty the uterus under deep anæsthesia by some method that is rapid and that will cause as little injury to the woman as possible.*

Those who follow the teachings of Charpentier, of France, and Winckel, of Germany, namely, that the uterus in eclampsia should be left alone, except after full dilatation of the os, as the irritation of inducing labor or artificially dilating a cervix precipitates convulsive attacks, will, we believe, see many cases lost that could by prompt and intelligent measures be saved. It would appear from careful observation that the danger is practically over in some ninety per cent. of cases the moment the uterus is emptied, if accomplished early in the attack. Not that by this means the convulsions always cease, but they become less dangerous, and the case becomes one of post-partum eclampsia, in which the mortality, as we have stated, is only seven per cent.

Although one can scarcely find an authority to-day, as shown by the reports of the last international congress, who absolutely rejects local interference in the presence of ante-partum or intra-partum eclampsia, still authorities differ widely as to the extent to which such interference shall be carried out. Charpentier, in 1892, as the result of an exhaustive analysis of four hundred and fifty-four cases of eclampsia, and again in the present year (1896) as the result of further observation, practically arrives at the same conclusions, namely:

1. That labor should be waited for and terminated naturally whenever possible.

2. That induced labor should be reserved for exceptional cases in which medical treatment has entirely failed.

3. That interference should be delayed until the cervix is dilated or dilatable, so as to avoid danger to the mother; that in eclampsia Cæsarean section, manual dilatation of the cervix, and especially deep incisions of the cervix are absolutely unjustifiable.

Charpentier, in this statistical analysis of the different methods of treating eclampsia and of the method known as Dührssen's deep incisions of the cervix, arraigns the latter in very forcible language, characterizing the operation as brutal and unjustifiable. He places himself in "resolute opposition to forced labor, . . . and even to induced labor, which he reserves for exceptional cases where medical treatment fails." He rejects absolutely forced labor by deep incisions of the cervix. From his analysis of the 454 cases, which included all known methods of treatment of eclampsia, he has constructed the following table: Mortality from spontaneous labor, 13.93 per cent.; from artificial labor, 29.13 per cent.; from Cæsarean section, 36.26 per cent.; from forced labor, 40.75 per cent. The infant mortality in the 454 cases was 164, or 36.12 per cent. Charpentier concludes that the best treatment in eclampsia is to wait until labor begins, and let it alone unless absolutely necessary to interfere. In the mean time he administers chloroform and bleeds if the patient be robust.

On the other hand, it would appear from the literature of the last five years and from the reports of the last international congress (Geneva, September, 1896) that the weight of medical opinion is in favor of emptying the uterus in as short a time as possible in instances of eclampsia, whether the attack occurs before or during labor, although there is a wide range of opinion as to the means to be employed. In the second stage of labor, after dilatation has been secured, all authorities are agreed that the immediate emptying of the uterus is indicated and is to be performed promptly; the indication under such circumstances is readily carried out without additional danger to mother or child. In pregnancy and the first stage of labor the undilated cervix is the barrier to immediate delivery, and it is here that obstetricians differ so widely as to the best method of procedure. An expectant or palliative treatment means almost certain loss of the child, and something like one-third of the mothers are lost. On the other hand, the child is saved and the mother is practically safe, as far as the eclampsia is concerned, if the uterus is immediately emptied by appropriate surgical means.

During pregnancy and the early part of labor four procedures are offered for rapidly emptying the uterus, viz.:

1. Cæsarean section.
2. Mechanical dilatation of the cervix (various methods).
3. Deep incisions which at once completely remove the barrier of the cervix.
4. Combined mechanical dilatation and deep cervical incision.

The first method, Cæsarean section, for the relief of eclampsia still carries with it a high mortality (36.26 per cent. according to Charpentier's figures); moreover, there are many objections to its employment, as the uterine atony and hemorrhage, the irritation of the uterine and abdominal scars and of the curative peritonitis about the uterine sutures, all of which are to be avoided as exciting causes of subsequent eclamptic seizures.

The second method, the mechanical dilatation of the cervix and the immediate extraction of the fœtus, appears to be the popular method of the day. Properly performed the method is safe and efficient. Before dilatation is well advanced, however, from forty minutes to an hour and a half is necessary safely to carry it out, and certain conditions of the cervix, even in this time, refuse to yield to manual dilatation or result in lacerations into the lower uterine segment. The third method of delivery, by deep cervical incision, offers us a surgical means for emptying the uterus in from five to ten minutes, provided the supravaginal portion of the cervix has disappeared or is made to disappear by appropriate means. The fourth or combined method is a combination of the second and third methods, and is applicable to cases in which the supravaginal portion of the cervix is still present and rapid emptying of the uterus is demanded. Here mechanical dilatation of the os until the internal os has been caused to disappear is made use of, and the dilatation then in an instant completed by the incisions. The third method and its modification, the fourth, are comparatively new, and we have few statistics as to the

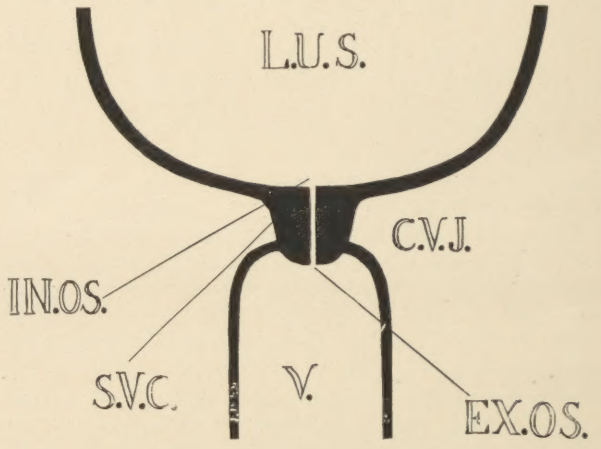

FIG. 1.—Cervix in Latter Part of Gestation or at Beginning of Labor. Vaginal and supravaginal portions of cervix unchanged. *v.*, Cuff of vagina; *ex.os.*, external os and infravaginal portion of the cervix; *c.v.j.*, cervico-vaginal junction; *s.v.c.*, supravaginal portion of cervix; *in.os.*, internal os; *l.u.s.* lower uterine segment.

results of the operation. We believe a rapid manual dilatation of the os and subsequent extraction of the fœtus will fulfil the indications in most cases, but unless this can be intelligently carried out, with a due appreciation of the mechanism of dilatation, especially in primiparæ, a purely expectant treatment will give better results. Unfortunately puerperal eclampsia is four times more frequent in primiparæ than in multiparæ, although, on the other hand, the mortality is greater in the latter.

The cervix uteri is composed of constricting and dilating muscle, and, while it is true that the first convulsions usually induce labor, still the resulting asphyxia exerts a marked constricting action upon the body of the uterus and cervix, which is especially marked at the internal ring of the os. Therefore, any method of rapid manual dilatation of the os that is undertaken before the internal os has been made, partially at least, to disappear is attended with great danger of uterine rupture (Figs. 1, 2). This is especially true in primiparæ, in whom the supravaginal portion of the cervix obtains late in pregnancy and even up to the beginning of labor (Fig. 1). We

believe a warning should be sounded against the careless undertaking of rapid manual dilatations of the os, particularly in eclampsia. Uterine rupture and death have, we know, been the outcome. Moreover, undue shock has resulted from the dragging of a fœtus

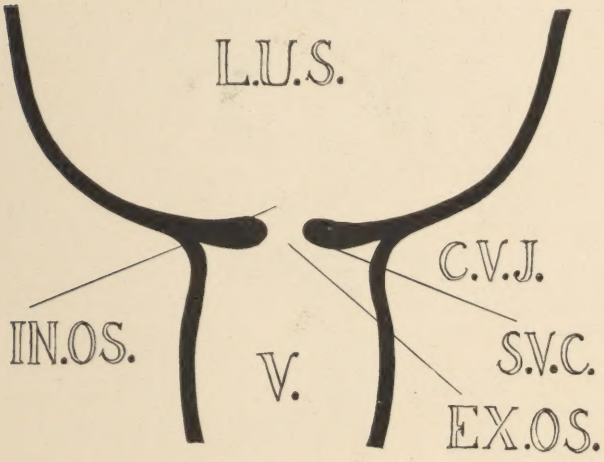

FIG. 2.—Lower Uterine Segment During Labor. *v.*, Cuff of vagina; *ex.os.*, external os, infravaginal portion of cervix has disappeared; *c.v.j.*, cervico-vaginal junction; *s.v.c.*, supravaginal cervix, small portion only remaining; *in. os.*, internal os; *l.u.s.*, lower uterine segment.

through an imperfectly dilated os, to say nothing of the loss of the child.

In placenta prævia the hemorrhage and the resulting anæmia of the lower uterine segment and cervix render these parts more readily dilatable. In eclampsia the reverse obtains, as we have already hinted. Hence it is that in eclampsia in instances in which the internal ring of the os has been drawn up into the body of the uterus (Figs. 2, 3), and the external ring remains rigid and tense, particularly in primiparæ, and there is urgent need of rapidly terminating the labor, we prefer four clean incisions extending from the edge of the os to the utero-vaginal junction, in order to save the patient from the greater dangers of rapid manual dilatation.

In the second place, we believe a warning is not out of place against the premature extraction of the fœtus before full dilatation has been secured and the external ring of the os paralyzed. Premature extraction, under such circumstances, we know has resulted in many unnecessary and dangerous lacerations of the lower uterine segment, and an increase of the mortality for the child and mother.

(*III.*) *Elimination of the poison or poisons which we presume cause the convulsions.*

For the elimination of the toxic materials from the blood and tissues we have nothing new to offer. We believe it essential, however, to rely not upon one but upon all the eliminative organs of the body, and, moreover, that the fulfilment of this third indication in the treatment of eclampsia should go hand in hand with the first two already mentioned. To this end we secure catharsis as early and as promptly as possible by the administration of croton oil, compound jalap powder, or calomel, followed by salines and high enemata of sulphate of magnesium. In the coma or post-eclamptic stupor of the condition, we have relied mainly upon the repeated administration of concentrated solutions of sulphate of magnesium or Villacabras water, by means of a long rectal tube high up in the descending colon. The hypodermatic administration of magnesium sulphate we have found too slow and uncertain to be of any use. Diuresis we obtain by dry or wet cups over the kidneys, followed by hot fomentations. The value of glonoin as a diuretic and antieclamptic, the latter by reducing the arterial tension, we believe, cannot be overestimated. Second only in value to glonoin we consider veratrum viride. We give it at this time for the same reasons and looking for the same results as when we administer it in the pre-eclamptic condition. Diaphoresis we encourage by means of the hot-air bath or the hot pack, our preference being for the former. Pilocarpine as a diaphoretic in the presence of an eclamptic attack we utterly reject, because of the danger of œdema of the lungs and glottis which it may produce. We have seen these conditions follow promptly upon its administration. The drawing off of large quantities of toxic liquids in the form of blood or serum, by means of venesection, catharsis, diaphoresis, diuresis, followed by the replacement of the same, by intravenous, stomachic, rectal, or hypodermatic means, causing a washing or disintoxication of the blood and tissues, as it were, has thus far proved of doubtful value. In instances of collapse, however, with the small compressible pulse, the introduction into the blood of a normal saline solution is of the same value here as in collapse under other circumstances. As a general stimulant, to assist in the elimination from the lungs and to prolong life in the post-eclamptic stupor or coma, we have found the free administration of oxygen of the greatest value. Further, alcohol will often be needed as a stimulant during and after an eclamptic attack, and strychnine in the post-partum state and in the face of threatened collapse—although for physiological reasons it would seem to be contraindicated—has served us well.

Finally, although no one has been or is a firmer believer than the writer in the efficacy of a prompt removal of fœtal metabolism and of irritation for not only the control but the cure of the eclamptic condition, still we beg to enter a protest, first against

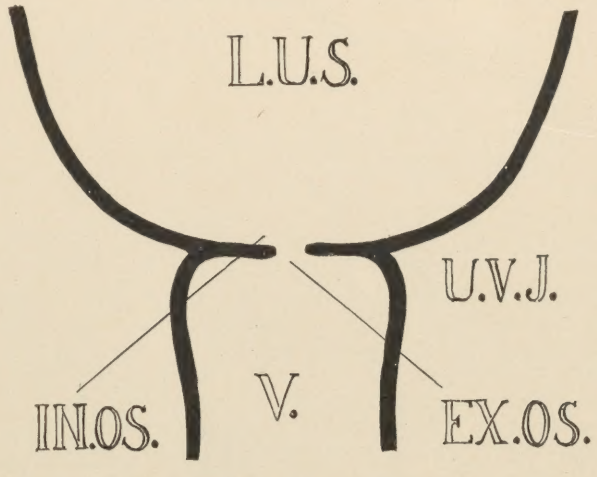

FIG. 3.—Lower Uterine Segment During Labor. Os uteri in progress of dilatation. Supravaginal and infravaginal portions of the cervix have disappeared. Os admits one finger. *v.*, Cuff of vagina; *ex.os.*, external os; *u.v.j.*, utero-vaginal junction; *l.u.s.*, lower uterine segment.

the careless use of the term *accouchement forcé* as applied to the rapid, scientific, and intelligent emptying of the uterus; and, secondly, to the easy confidence with which this *accouchement forcé* has been recommended as the best if not the only means at our

command for the control of eclamptic seizures, without attaching sufficient importance to the condition of the cervical barrier. By *accouchement forcé*, we understand to-day three operations, namely, (1) the complete instrumental or manual dilatation of the cervical canal, followed by (2) either combined or direct version, or the application of the forceps, and (3) the immediate extraction of the child.

The *accouchement forcé* of the older writers upon obstetrics was often quite another and more serious operation, for the condition of the cervical canal was frequently lost sight of, and it too frequently meant (1) the plunging of the hand or the application of the forceps through a cervical canal imperfectly dilated, and (2) the immediate extraction of the fœtus through this constricted os. That the latter definition of the term still obtains, seems proven by the frequency of accidents in the extraction of the fœtus that are con-

FIG. 4.—Bimanual Dilatation of the Parturient Os. Os two-thirds dilated. Entire effacement of the internal os. Compare Fig. 5. (From a photograph.)

stantly being brought to our notice. Our maternity hospitals are repeatedly in receipt of ambulance or emergency cases due to the neglect on the part of the operator to fulfil the first condition of the operation, namely, complete dilatation. Within the past few days, while preparing this very portion of the paper, the writer was summoned by telephone to remove from the uterine cavity a fœtal head decapitated by traction upon the trunk, in the presence of an imperfectly dilated os. The retained head resulted in post-partum hemorrhage, and the additional shock of its subsequent extraction. It is no uncommon event for emergency cases to be brought to our hospitals with a podalic version or extraction partially completed because of the operation's being attempted in the presence of a partially dilated os (Figs. 4, 5); moreover, for uterine rupture to occur, due to the same cause.

In Fig. 5 we have represented the outcome of a premature extraction through an imperfectly dilated os. With such a complication—a rigid, imperfectly dilated external os, grasping the fœtus tightly under

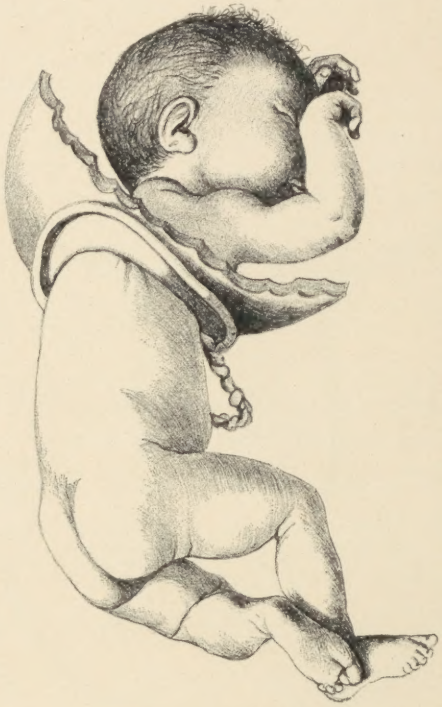

FIG. 5.—Dangers of a Rapid Breech Extraction through an Imperfectly Dilated Os. External os not fully dilated or paralyzed. Traction on the legs results in extension of the head and both arms.

the armpits—the loosening of the arms, the dragging of these, and subsequently the head through the os will take considerable time, and not only forfeit the child's life but subject the lower uterine segment to dangerous if not fatal rupture. Our plea in these cases is not alone for complete dilatation or disappearance of the external ring, as seen in Fig. 6, but further, for a paralysis of the ring as we see it performed in Fig. 7, so that the dangers of the extraction, whether

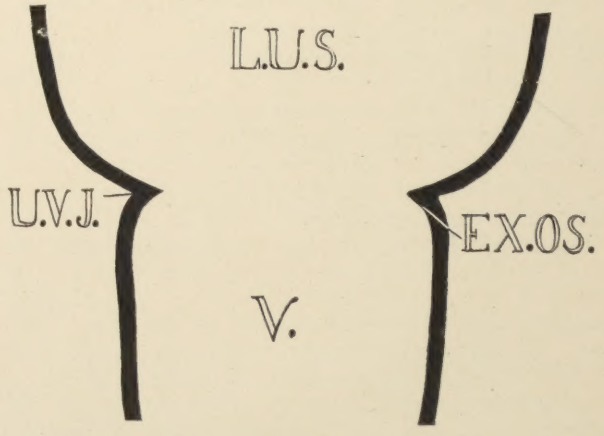

FIG. 6.—Lower Uterine Segment at Completion of First Stage of Labor. Os uteri completely dilated. *v.*, Cuff of vagina; *ex.os.*, border of external os, scarcely perceptible; *u.v.j.*, utero vaginal junction.

by forceps or version, may be reduced to a minimum for both mother and child.

The limits of the present paper forbid our entering upon the arguments for or against any particular variety of rapid manual or instrumental dilatation of the

parturient os, further than to state that our preference is for a rapid bimanual method, as shown in the illustrations, since we have given this method an abundant trial over a period of several years, and it has proved most satisfactory.

The bimanual method is to be preferred to other digital and instrumental methods, because (1) the membranes are preserved throughout the operation or until full dilatation is obtained; (2) there is no interference with the original presentation and position; (3) the sense of touch of the operator's fingers is unimpaired; (4) there is no constriction of the operator's hands; (5) the amount of force exerted upon the external ring can be better estimated, and hence there is less likelihood of lacerations occurring; (6) in placenta prævia there is less preliminary separation of the placenta by this method than by any other; (7) by no method with which we are acquainted, can not only complete dilatation but complete paralysis of the

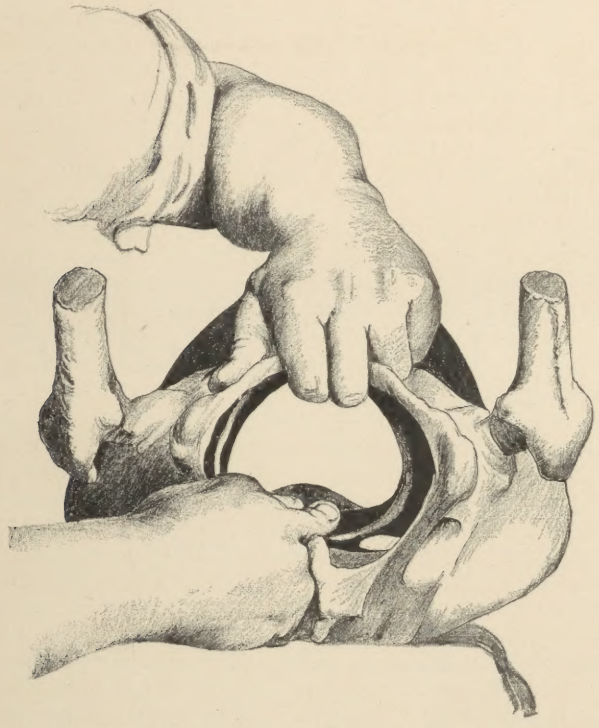

FIG. 7.—Bimanual Dilatation of the Parturient Os. The os is fully dilated and is being stretched and paralyzed, to prevent subsequent accidents to the after-coming head during the extraction of the fœtus. Compare Fig. 6. (From a photograph.)

parturient os be so quickly and safely obtained (Figs. 4, 7).

Again, we beg leave to protest against the undertaking of a rapid manual dilatation of the os (namely, the entire dilatation completed within an hour) before the cervix has become, at least slightly, relaxed by uterine action and is already somewhat yielding. A rigid cervix, in the condition as we see it in Fig. 1, should, we believe, receive a preliminary treatment, a cervical dilator of gauze or hydrostatic bag, that will set up some uterine action and render the rings of the os yielding enough to make a rapid dilatation a safe operation. In the presence of even a minimum amount of uterine action, or with a softening, yielding, and relaxing os, although the anatomical conditions may obtain as in Fig. 1, we may still undertake the rapid manual dilatation and produce complete paralysis of the cervix within an hour, as seen in Fig. 7. Far better a purely expectant treatment, as regards emptying the uterus, than the attempt rapidly to overcome a rigid os by manual methods, the supravaginal portion of the cervix being present. We have known complete uterine rupture to result from such an undertaking, the maternal intestines prolapsing between the fingers of the operator. Fortunately for the eclamptic woman, the frequency of the attack increases proportionately with the progress of gestation, and, we may add, with the increase of fœtal metabolism. Hence, the attack is more frequent in the latter part of pregnancy and in labor, when we can more readily and safely apply our surgical principle of treatment, namely, an early and rapid evacuation of the uterus.

Unfortunately, the attack is four times more frequent in primiparæ than in multiparæ, and in the former the presence of the supravaginal portion of the cervix late in pregnancy and of an unyielding and unrelaxed os compel us to make use of preliminary and temporizing means before we can safely perform a rapid dilatation of the os and subsequent extraction of the fœtus. It is in such cases, and at such a critical time, when we are waiting for the measures preparatory to a rapid dilatation and emptying of the uterus to act, and to give us at least a yielding and relaxed cervical canal, if not a partial disappearance of the internal os, that we have found veratrum viride most valuable and life-saving, by reason of the various actions of the drug already mentioned.

50 EAST THIRTY-FOURTH STREET, NEW YORK,
November 27, 1896.

DISCUSSION OF THE PAPER.

Eclampsia Can be Prevented.—DR. EDWARD P. DAVIS, of Philadelphia, opened the discussion. Two years ago he had spoken in New York on the toxæmia of pregnancy, and he might say that experience since had strengthened his belief that eclampsia was largely preventable. The amount of urine was, as a rule, a valuable index to the amount of solids, a scant quantity pointing to deficient excretion and the necessity for special diet or preventive measures. Tarnier's statement that the mortality at his clinic had been thirty-eight per cent. until he had adopted in all cases of deficient elimination a rigid milk diet, when it fell to nine per cent., was a most forcible illustration of the value of preventive treatment.

Dr. Davis called attention to the fact that symptoms relating to the nervous system, as melancholia, were frequently the first indications of deficient elimination. The warm bath at night took the place of chloral or bromides in inducing sleep and at the same time aided elimination. It was well to give every pregnant woman a diet list.

The interruption of pregnancy when the pre-eclamptic condition was present, in the light of modern science, was not debatable. It was the imperative duty of the obstetrician. He had found dilatation more equal and complete under dilating-bags than when the hands alone were used.

Before speaking of the treatment of the eclamptic attack, he wished to say that those who followed out the idea of a toxæmic cause would have few cases among their own patients. But there were consultation cases in which eclampsia had already developed.

Certainly emptying the uterus was important. Controlling the convulsions was immediately indicated. Cæsarean section would be the ideal method of emptying the uterus at once if the child were the chief consideration, but it was likely to be dead when the obstetrician was called, or stood but little chance of living afterward. Consequently the life of the mother was first to be considered, and if a surgical operation were required it was better to make a clean Dührssen incision into the neck of the womb.

Regarding veratrum viride, he agreed with the author that it belonged to the apoplectiform cases alone. Salines were indicated. Atropine was to be used in pulmonary œdema. Digitalis and strychnine gave better results than the latter drug alone. On other points the author agreed with Dr. Edgar. Since it had become his custom to have the elimination of pregnant women watched, he had not seen a case of eclampsia except in consultation practice.

Empty the Uterus Too Soon Rather than Too Late.—Dr. Charles Jewett, of Brooklyn, believed in prophylactic measures, remedial and dietetic, when the urine and other facts pointed to deficient elimination and threatening eclampsia, but when these measures failed to produce a response he emptied the uterus, and preferred to empty it too early rather than take the chances involved in allowing the symptoms to go on. The viability of the child was worth little prior to the ninth month, in the uræmic mother. For dilatation the water bag was, all things considered, worth more than the hand, but there were cases which yielded so readily to the hand that it constituted the more rapid and satisfactory means. For the control of eclampsia in labor, chloroform was very valuable, but it added danger if its use had to be continued long. Veratrum viride was the most valuable of the drugs. Dührssen's incisions should be reserved for emergency. He believed venesection would come into more general favor, especially when the attack was attended by a good deal of cyanosis. Saline injections had been of great value in his hands. He had relied largely on water as a diuretic in prophylactic treatment. While milk diet was of value, yet in his experience it had not been sufficient without other food to support the patient more than two weeks. His experience had not been so favorable with trinitroglycerin as with veratrum.

Surgical Methods in Obstetrics.—Dr. Egbert H. Grandin thought there was little ground for difference of opinion with regard to the prophylactic treatment of eclampsia. He was satisfied that Dr. Davis did not make use of too strong a statement when he said that eclampsia was a preventable disease. A pregnant woman duly watched by her attendant ought not to have eclampsia, or, if premonitory symptoms developed, she ought not to die. In the past we had been taught too much to watch for albumin and too little to watch for urea. Toxæmia and not albuminuria was the term which should be employed. The term urinæmia and not eclampsia should be drilled into the mind of the student.

The speaker said he now came to the question which interested him most, and yet he approached it with diffidence, since quite lately in this city a leader in the obstetrical world had referred rather sneeringly to the surgical tendency of the younger obstetricians. It was the surgical tendencies, together with the aseptic tendencies, which had made the lying-in room to-day as different from that of the past as the heavens were above the earth. It was the distinctly surgical tendencies of the younger gynecologists and obstetricians which were robbing labor of its dangers. As he stood prepared again to advocate the surgical tendencies, it was with the diffidence which the pupil should always yield to the master.

The following statements were based on his personal experience: Given a woman with impending eclampsia, and the rule of action should be surgical as speedily as the surgical instrument which the Almighty had given us, the best of all, the hand, could do it. There was no time for Barnes' bags, nor for other dilating-bags. After the seventh month and a half of utero-gestation, in primiparæ as well as in multiparæ, the hand, and the hand alone, barring exceptional cases, could, in a shorter time than any drug could possibly do, place the woman in such a position that the mortality rate, as pointed out by Dr. Edgar, was reduced to seven per cent. He was, however, in full accord with all that the reader had said in deprecation of the irrational use of the hand. He also objected to the use of that old and abominable term, *accouchement forcé*, which apparently had been the cause at the late Geneva conference of scarcely a voice being raised in favor of rapidly emptying the uterus. The procedure which he advocated, and which had been described by Dr. Edgar, was not *accouchement forcé*. There was nothing forcible about it. It was simply a muscle yielding to applied pressure. The uterine muscle would yield to the applied pressure of finger after finger even as would the sphincter ani, only it took a little longer. When time was not a factor, the gauze tamponade should always be used for six or eight hours to secure preliminary softening of the cervix and lower uterine segment. In every case in which urgency did not allow of this preliminary tamponade, any man who could not dilate the cervix and empty it within thirty minutes, in ninety-eight and a half per cent. of cases, did not know how. And absolutely no force should be used at all. Due care should be taken entirely to paralyze the cervix and lower uterine segment before any attempt was made to extract the child, which should always be done by version when there was sufficient liquor amnii present to allow it. Delivery must be effected rapidly, else the cervix would recontract. Then the colon should be washed out with gallons of water, as much as sixteen to twenty gallons. This would also cause a more profuse diuresis than a Turkish bath. With such treatment one would find even the mortality of seven per cent. in eclampsia disappearing. He was opposed to Cæsarean section, and had made deep incisions into the cervix but once. He believed in the use of drugs after the uterus had been emptied, but he did not believe in waiting before this for their slow action, when the uterus could be emptied within thirty minutes by the hand and the eclamptic seizures reduced thereby to one-sixth in frequency. If one was not afraid of the surgical tendency in obstetrics and would leave ruts, he would rarely lose a woman in eclampsia, and he might save a third of the children.

Dr. Lusk's Reply.—Dr. William T. Lusk was the next speaker. In reply to his interrogatory, he was informed by Dr. Grandin that it was to a stenographer's report of some remarks which he had made that Dr. Grandin had referred. Dr. Lusk then said he presumed that nobody had been more consistent

than he had been from the time of his first essay at teaching, in maintaining that the proper treatment of eclampsia was, whenever the symptoms were sufficiently threatening, or whenever they were threatening at all during pregnancy or labor, to empty the uterus. He was glad to learn that the younger men were keen in mind in that respect. But surgical evacuation of the uterus, or call it by any other name, was abortion, and we did not want to practise abortion unless we had reason for doing so. We did not want to empty the uterus unless there were some symptoms. He presumed Dr. Grandin would agree with him on that point. Yet within twelve months a woman had been brought to him for consultation as to emptying the uterus when there was not a single symptom, but only a trace of albumin in the urine. All knew that during the second half of pregnancy a large proportion of normal women had a slight trace of albumin in the urine. This called, perhaps, for watchfulness and diuretic treatment, but it did not call for surgical treatment.

With regard to prophylaxis, one of the speakers had said, and correctly said, that it was not alone the albumin which should be considered, but all the constituents of the urine. But mention was made of a fall in the amount of urea, while the fact was ignored that urea was not poisonous at all, and the amount of urine was not considered. In some older works on physiology four hundred grains were laid down as an average amount of urea passed daily, yet a woman had been brought to him for consultation as to emptying the uterus because she was passing only two hundred grains of urea a day. The amount of urine was from fifty-two to sixty ounces, and there was not a single symptom. The family was anxious, but he advised waiting, and said that if she reached the thirty-sixth week he would not care if labor was induced. His advice to try milk diet was followed, and immediately the urea increased from two hundred to four hundred grains a day, allowing that the percentage in the urine was the same. She went to term and bore a healthy baby. The course pursued in this case was what he meant in contrast to surgical tendencies. If that woman had had any puffiness of the eyes, dizziness, headache, symptoms of poisoning, he presumed he would have been as ready to empty the uterus as Dr. Grandin would be. But he did not consider emptying the uterus so innocent a thing, in spite of the surgical skill of the younger men of the present time; it was not so innocent as it had been represented. Within a few days a woman had been brought to him to have a fœtus removed. She was somewhat undersized, but the pelvis was normal, and he saw no reason for inducing abortion. When she was informed of this she began to cry, and explained that she had been under great anxiety because her dearest friend had come to the city to be relieved of her baby, and mother and baby were brought home in a coffin. Yet that abortion had probably been induced with great skill. He could recall another case: the uterus was emptied surgically, was packed with gauze; the work was done admirably, and the uterus needed to be emptied; but in spite of the gauze packing there was such hemorrhage that for twenty-four hours the woman was between life and death. He could not help believing, therefore, that unless all these cases were treated by one man such accidents would occur.

Dr. Lusk had been accustomed to Barnes' bags, and liked them, but when Dührssen's incisions were introduced he thought he would use them in order to save time in urgent cases. But, being cautious, he had waited and watched the discussions upon the method since, and had found that not all of those who had tested it had been satisfied with the result. There had been cases of severe and even fatal hemorrhage. He was glad to hear Barnes' bags referred to to-night, as one might have supposed that to some their existence was unknown.

Toxæmia of Pregnancy Divided into Mild and Severe Forms.—Dr. James W. McLane said the cases under discussion had presented themselves to him in two grades. The first, perhaps the most common variety, were cases of mild toxæmia associated with slight albuminuria. These, he supposed, were the cases to which Dr. Lusk had just referred, in which the amount of albumin in the urine was small; there were few nervous symptoms, and the patient, if carefully watched and kept on a milk diet, usually went on through her pregnancy with safety. Possibly as she neared the end and her diet was not restricted, she might show some nervous symptoms which would require interference, but by that time the fœtus was viable and could be removed by the induction of labor. He was not in the habit of treating such patients medicinally. He simply put them on a milk diet and confined them abed a part of the day, for it seemed that if any one thing would increase the albumin in the urine of these patients it was overexertion, especially in walking. There was no objection to their driving out. The bowels were kept free, and the skin active by a daily bath.

Eclampsia Not Altogether a Preventable Disease.—The other class of cases was quite different from those just described, and Dr. McLane could not agree with those who believed that eclampsia was altogether a preventable disease. He had seen patients in whom the most careful examination of the urine two or three days prior to the breaking out of the eclamptic seizure failed to reveal anything. He was unable to see how in such cases the accident could be considered preventable. The toxæmia in them was probably compound, for he did not believe we had yet discovered the particular poison, if there was one, which caused the eclamptic seizure. He thought we might well believe that it was made up of a number of toxins, that these were present in the blood during pregnancy, and something, the nature of which we did not know, might be added to them suddenly and produce the explosion. We saw some of these cases just before the convulsion, and in them we found a hard, full, bounding pulse, a flushed face, usually severe headache, dimness of vision, possibly vomiting, and all within the course of a short time. Personally he knew of nothing which gave so good results in such cases as the immediate abstraction of blood. He preferred venesection to cupping, taking away from twelve to sixteen ounces. He did not mean to say that the venesection would cure the patient, but it gave time in which to do what else was necessary. He would call this the acute variety of cases.

Dr. McLane was a firm believer in the induction of premature labor, but he also believed in watching the case and carrying it along to the period of viability, when the child could be saved. He did not believe at all that the child was damaged by the mother's condition. Some of the best children whom he had

watched growing up in the city were children whom he had brought into the world prematurely for this very condition. One woman had twenty-seven convulsions, yet he delivered her prematurely of a vigorous child.

One method of treatment which had not been mentioned, but one from which he had obtained excellent results, was to rupture the membranes and let the waters escape. The action seemed to be similar to that of venesection. Thus obtaining immediate relief, one could then proceed to delivery.

He had been very much surprised at Dr. Grandin's statement with regard to the facility with which the cervix could be dilated in cases of eclampsia. Such had not been his experience. He had seen cases in which it was impossible for the strongest hand to effect dilatation within thirty minutes except by rupture of the uterus; and he had seen the uterus ruptured under such circumstances. He did not believe it was good practice to proceed in this manner, for the reason that these patients were in a state of wonderful nervous tension, and even the passage of a catheter without giving chloroform, or a vaginal examination, would bring on a convulsion. To attack the uterus in this vigorous manner must disturb the nervous system very much. He would prefer to proceed by a gentler method to get the uterus open, by the use of Barnes' bags.

After delivering the woman he allowed her to bleed a little from the womb, had some one sit by the bedside and, when a seizure threatened, give her a few drops of chloroform to inhale. Meanwhile she was rolled up in a hot pack, hot salt water was thrown up the bowel, and the action of the chloroform was promoted by morphine. He had had no experience with veratrum viride, for he had not seen a woman with a pulse after labor and convulsions to whom he would like to give this drug. At first the pulse was strong and full, but after the seizure it was anything else; it was small and feeble.

The temperature was a guide to prognosis. It was high when the patient was going to die. He had seen it as high as 107° F. in the rectum before death, and 108° F. an hour after death.

In conclusion he said that the impression which these cases had always made upon him was that the sooner we got the child out of the uterus the better for the woman, provided the means which we employed were not too severe; that the women who had done best were not those who had been treated by rapid, forcible dilatation, for they were the ones whom they had lost in the hospital—some from rupture of the uterus, some from shock.

Regarding pilocarpine, he had supposed it had been dismissed from obstetrics. He regarded it as one of the most dangerous drugs in the pharmacopœia, and since we could get diuresis without it he thought it was best, for him at least, to let it alone. He had known it to produce fatal œdema of the lungs in one woman who had a fair chance to recover.

Dr. R. A. Murray said he also had found the quickest effect from rupture of the membranes, thus relieving tension. Next in value was withdrawal of blood from the arm. In one or two cases he had stopped the convulsions by using the catheter to withdraw urine which had been retained by pressure of the womb upon the vesical neck. The specific gravity of the urine should be considered in relation to the quantity passed daily. He fully agreed with Dr. Grandin with regard to manual dilatation and rapid delivery. He had accomplished it in less than an hour in three different cases within the past six months, for threatening convulsions in primiparæ. But thirty minutes were required in one case which was more urgent than the others. He would defy any man to rupture the uterus with the fingers. But it could be done in extracting the child. Chloroform and previous venesection aided greatly in getting the dilatation up to the point where the two fingers could be introduced. If time would permit, Barnes' bags should be used. After dilatation had been thoroughly accomplished, delivery should be made rapidly under chloroform, else the cervix would recontract.

Dr. Murray could not agree with the last speaker that the convulsions in the mother did not harm the child. He had seen eclamptic seizures in children, similar to those which had occurred in the mother, several days after birth. In a paper which he had once read, the fact was pointed out that more of these women who survived had Bright's disease subsequently than of those women who passed through pregnancy without a convulsion.

Thirty Minutes Enough.—Dr. P. A. Harris agreed fully with Dr. Davis, that children born of women suffering from the toxæmia of eclampsia had diminished vitality and gave more than the average mortality. He had resorted to incisions of the cervix in only one case, that of a woman on whom trachelorrhaphy had been performed, leaving the cervix rather close and demanding the incisions to start dilatation. Regarding manual dilatation, he had published a method at the first Pan-American Medical Congress with which he had since had considerable experience. Only last March he had read a paper before the Philadelphia Obstetrical Society, containing the histories of ten cases in which he had employed the method, four for eclampsia, six for placenta prævia. In only one was more than an hour, seventy-five minutes, required for both dilatation and delivery. Usually only fifteen to twenty minutes were required for dilatation, and twenty to twenty-five for delivery, including extraction of the placenta. Only one mother was lost, the cause of death being the disease, not any accident connected with delivery. He thought Dr. Grandin ought to be supported in his remarks on rapid delivery by those who had had similar experience with some manual method.

Rapid Dilatation Failed.—Dr. Bernard Gordon said he knew of a case in which four physicians tried rapid manual dilatation; all failed. They found the os too rigid, and, fearing hemorrhage if incisions should be made, they performed Cæsarean section. The mother and child died. The statement that the physician would be to blame, if a woman under his observation should die of eclampsia, was unjust to the profession, since we knew not the cause of eclampsia.

Dr. J. Clifton Edgar, in closing, said: We are very grateful to the various speakers for the general discussion which the paper has called forth, and to Dr. Davis in particular, for referring to the train of nervous phenomena as symptoms of the pre-eclamptic condition which were omitted in our paper. Our answer to him is that we have come to rely so much upon the physical signs that the nervous symptoms seemed of minor importance. Still, we admit that these very nervous symptoms which Dr. Davis has so graphically

described are in some instances the earliest clinical index of an approaching eclamptic seizure that is offered us.

Regarding the use of the hydrostatic bags of Barnes, we have found them of use only as preliminary measures, namely, to prepare the cervical ring for a more rapid and thorough subsequent dilatation.

Cæsarean section, as a means of rapid delivery in the presence of an eclamptic attack, we absolutely reject. Charpentier shows, as we pointed out in our paper, that the operation still carries with it a maternal mortality of 36.26 per cent., in eclampsia. Moreover, in the absence of pathological conditions of the cervix, we believe there is no cervix that cannot be dilated either by manual methods or by incision in time to meet every indication.

We are in accord with Dr. Davis as to the value of atropine given by needle, not only for the œdema of the post-eclamptic state, but also for its ante-eclamptic action. The point to which Dr. Davis refers, and which we wished to make the prominent one of our paper, was that the only successful preventive treatment of puerperal eclampsia rests in the early recognition of the pre-eclamptic state, as shown in the early diagnosis of eliminative insufficiency.

The axiom that it is far better for the patient suffering from eliminative insufficiency to induce labor too early rather than too late, which Dr. Jewett has proposed, we are quite in accord with. We notice that Dr. Jewett, of all the gentlemen taking part in the discussion, is the only one who has referred to the stupefying effects of chloroform. This we touched upon in the paper, and we believe it should be given greater prominence. Our experience has satisfied us that the less anæsthetics and narcotics the patient receives, the better the prognosis. Not only chloroform, but morphine, chloral, and the bromides deepen the post-eclamptic stupor and coma and increase the tendency to death during the coma, by reason of these drugs interfering with the eliminative processes. We have made reference to the practice of certain maternities, as reported at the last international congress, where chloroform has been absolutely abandoned as an anti-eclamptic, except when operative interference was demanded. The secret of success here, as in the preventive treatment, is an early and thorough eliminative treatment. We firmly believe that close observation will convince any one of the stupefying effects of even small doses of chloroform, given as an anti-eclamptic. For this reason we relied as much as circumstances would permit upon veratrum viride, which drug not only controls the convulsive seizures, but acts at the same time as a diaphoretic and diuretic, thus fulfilling two of our conditions at one and the same time.

The statement made by one of the speakers, that all cervices after the seventh and a half month will yield to a manual dilatation and allow of the uterus being emptied within thirty minutes, we believe is a dangerous teaching and should not be permitted to pass without question in a meeting of this Academy of Medicine. It is to such statements that the accidents referred to in the paper are due, and it was against the careless undertaking of the rapid dilatation, without taking into account the condition of the cervix uteri at the time of operation, that we protested in our paper. Further clinical experience we are sure will cause the speaker to modify his statements.

We agree with Dr. Lusk that the daily amount of urea excreted is not always a reliable clinical index of impending renal inadequacy and eclampsia.

It is not one physical sign but all of them, and the symptoms as well, that must be weighed in the balance before we can decide upon such operative interference as induced labor. To secure an early evacuation of the uterus as a preliminary measure, a Barnes' bag, we believe, will do all that has been claimed for it. To secure full dilatation of the os, so that the fœtus can be extracted with safety to itself and its mother, we look upon the Barnes' bag as entirely inadequate, and not to be compared to the careful bimanual stretching and paralyzing of the cervical rings. Dr. Murray's statement, that it is impossible to rupture the uterus during the performance of a manual dilatation, is answered by the instances of partial and complete rupture of the uterus referred to in the paper. With Dr. Harris' method of digital and one-handed dilatation of the os we are familiar, and have given it trial in hospital practice. The method of operation has to do with the personal equation. For ourselves we have found the bimanual method, as depicted in the diagrams, most satisfactory, for reasons stated elsewhere, but especially for the one reason that by this method we can produce complete paralysis of the external ring of the os, which by Dr. Harris' method we have been unable to accomplish.

Dr. McLane has referred to the value of uterine bleeding in the third stage as helpful in lessening the severity of subsequent eclamptic attacks. We believe the practice of allowing the uterus to remain lax and bleed a most excellent one, and it often takes the place of medication to reduce arterial tension.

We cannot subscribe to the practice of an early rupture—in the first stage—of the membranes as an anti-eclamptic. We grant that the rupture of the membranes at this time apparently temporarily controls the convulsions, but our experience is that subsequently the presence of the fœtus in the uterus, not surrounded by its cushion of liquor amnii, is a greater source of peripheral irritation than when the membranes are intact and the liquor amnii is present. The worst instances of eclampsia, brought in as emergency cases to our maternity hospitals, have been those in which the membranes have ruptured early spontaneously or have been artificially ruptured in the first stage. Moreover, the subsequent labor is prolonged, and the difficulties and dangers of operative interference are enhanced by such a procedure.

We make the same objection to the continued use of chloroform and morphine in the post-partum state as anti-eclamptics, as in pregnancy or labor. Not but that they serve as well in some instances, but, as we said before, the less the patient receives and the more attention we pay to elimination—bowels, skin, liver, kidneys—the better the prognosis.

It is the experience of most observers that the high arterial tension does not always diminish or disappear after one or two eclamptic seizures. We have seen many cases and reported several in which the high tension persisted for days and even several weeks, and the continued use of glonoin and veratrum viride was necessary to combat this symptom and prevent subsequent eclamptic attacks.

Pilocarpine, as we stated in our paper, we utterly reject in the presence of an eclamptic attack. To assist us in the treatment of the eliminative insuffi-

ciency of pregnancy, namely, in the preventive treatment of eclampsia, we believe we have a valuable adjunct in the muriate of pilocarpine. We have two patients at present in private practice who occasionally present the clinical picture of the eliminative inadequacy of pregnancy, as shown by an examination of the urine and the general physical signs and symptoms already referred to. In these a restricted diet and an occasional dose at bedtime of pilocarpine, calomel, digitalis, and squill, act most happily, and the stimulation of the skin, kidneys, bowels, liver, by this combination, removes for the time being all unfavorable symptoms. We have seen no unpleasant or dangerous symptoms follow its use in this manner, for two years past.

That eclamptic women do best in whom a rapid dilatation of the cervix and evacuation of the uterus are not performed is, as we have stated, the teaching of Charpentier, of Paris, and, as the reports of the last congress show, he stands almost alone in the world in this position. The more clinical experience we have, the more we study these eclamptic cases, the more convinced are we of the truth of Dührssen's statement made several years ago, namely, that in ninety per cent. of eclamptic cases the danger is practically over when the uterus is rapidly emptied early in the attack. Moreover, we are firmly convinced that a careful study of the anatomy and physiology of the pregnant and parturient cervix, and of the various methods of intelligent, scientific, and rapid dilatation of the same, will satisfy any unprejudiced observer that the operation can not only be performed without any additional danger to mother or child, but that it is a life-saving procedure for both parties concerned.

In order that we may render our preferred method of rapid dilatation of the pregnant or parturient os more graphic, and also that the sequence of the different steps of the operation may be more clearly set forth than they are in the limited number of illustrations in the foregoing article upon puerperal eclampsia, we have thought best to append here the following nine illustrations (Figs. 8–16).

These illustrations are from photographs of composition and plaster models, and have already appeared in a series of articles on "Methods and Aids in Obstetric Teaching," published in the *New York Medical Journal*, November 14, 21, 28, and December 5, 1896.

The illustrations demonstrate the different steps in a rapid dilatation of the os uteri, commencing with instrumental dilatation (Fig. 8), at a time when the internal os has partially disappeared, and the cervical canal is somewhat relaxed and yielding, continuing with digital dilatation, and finally ending with bimanual stretching and paralyzing of the fully dilated parturient os uteri (Fig. 14). In Fig. 15 is shown the position of the fingers in the bimanual method of cervical dilatation, as seen from the uterine cavity; and we have added Fig. 16, which is after an actual photograph of the operation of manual dilatation of the parturient os, taken from nature at the Emergency Hospital (Bellevue Hospital service), in order that the position of the patient and the position of the operator's hands during the operation may be clearly seen.

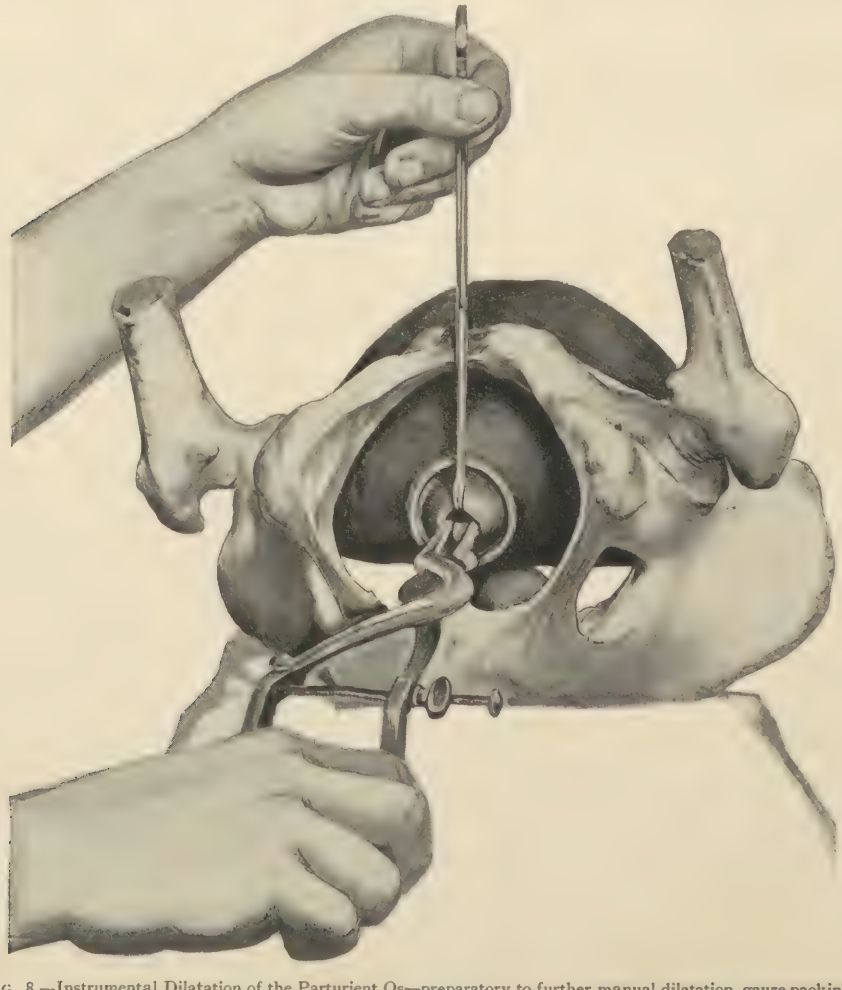

FIG. 8.—Instrumental Dilatation of the Parturient Os—preparatory to further manual dilatation, gauze packing, the introduction of bougies for the induction of labor or cervical dilators. (From a photograph.)

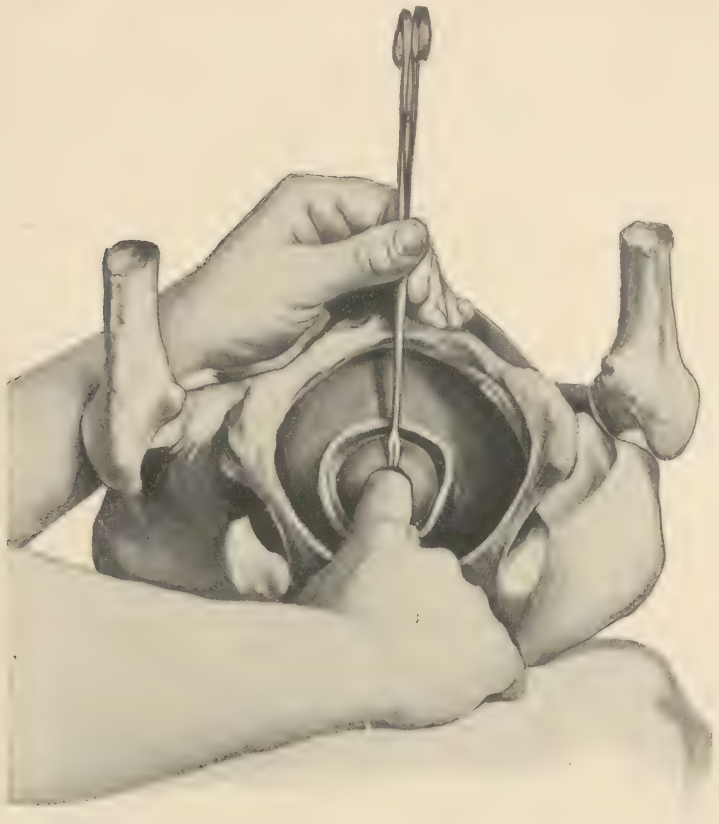

FIG. 9.—Digital Dilatation of the Parturient Os. Os admits one finger. Vaginal and supra-vaginal portions of the cervix present. Compare Fig. 1. (From a photograph.)

FIG. 10.—Bimanual Dilatation of the Parturient Os. Os admits two fingers. Vaginal and supra-vaginal portions of the cervix present. Commencing shortening of the cervical canal. Compare Fig. 1. (From a photograph.)

FIG. 11.—Bimanual Dilatation of the Parturient Os. Os admits three fingers. Supravaginal portion of the cervix disappearing. Compare Fig. 2. (From a photograph.)

FIG. 12.—Bimanual Dilatation of the Parturient Os. Os one-half dilated. Lateral position of the hands. (From a photograph.)

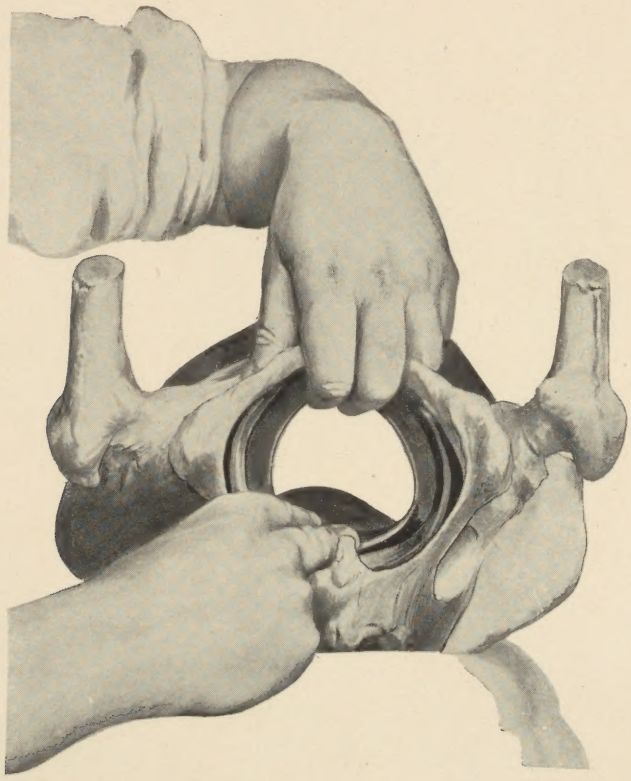

FIG. 13.—Bimanual Dilatation of the Parturient Os. Os two-thirds dilated. Entire effacement of the internal os. Compare Fig. 3. (From a photograph.)

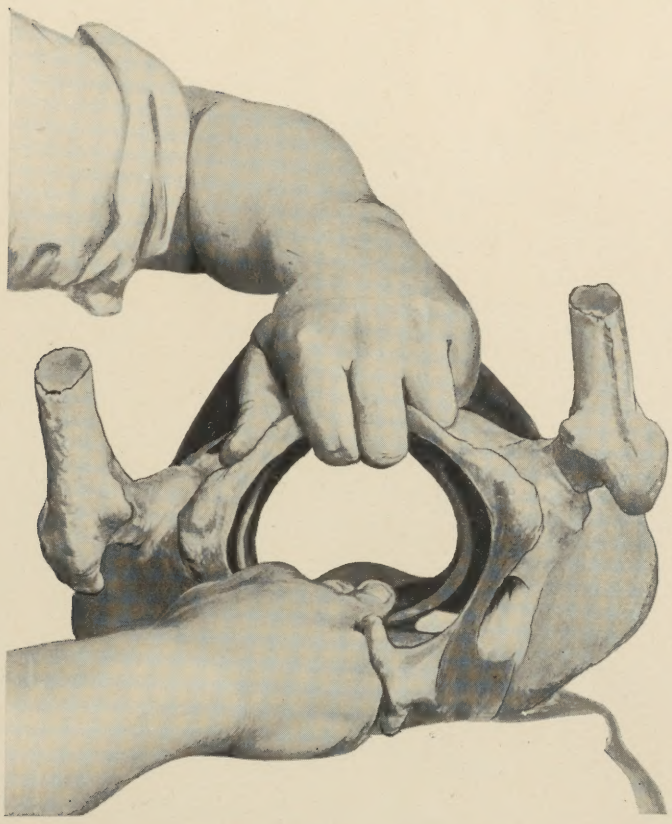

FIG. 14.—Bimanual Dilatation of the Parturient Os. Os is fully dilated and is being stretched and paralyzed to prevent subsequent accidents to the after-coming head during the extraction of the fœtus. Compare Fig. 6. (From a photograph.)

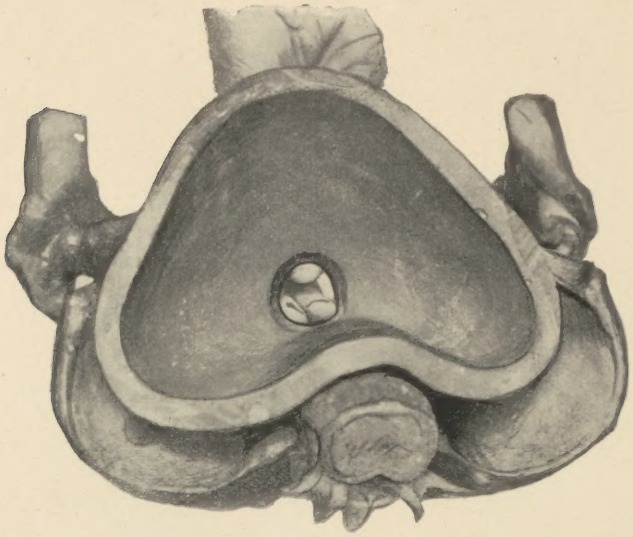

FIG. 15.—Bimanual Dilatation of the Parturient Os. Internal view, showing the position of the fingers. Os admits three fingers readily. Internal os still present. No encroachment of the fingers upon the cavity of the lower uterine segment. Compare Fig. 16. (From a photograph.)

FIG. 16.—Bimanual Dilatation of the Parturient Os. External view, showing positions of hands. After a photograph of the operation taken at the Emergency Hospital, New York City.